

November 23, 1957

Dear Dr. Frank:

Your review "Cancer & Viruses" was, if I may say so, a first class job of reporting, and I have very little critical comment.

A terminological point, however: 'transduction' was defined as the transfer of a hereditary fragment, whether by phage or by raw DNA. My remarks on infective transmission would be rather pointless if they did not refer to both of these means of hereditary transfer. The role of bacteriophage in phage-mediated transduction might be misunderstood if described as conferring a trait (though this is an admissible use of the word 'confer'). But since the role of the phage is conceived to be that of a passive vector (in most cases) it would be better to say that the genetic traits are carried by the infecting phage, in the sense that the phage-nucleus itself is probably distinct from the carried genes.

A propos the cancer problem generally, the geneticist's approach would be that a clone of neoplastic cells can and will evolve into this state by means of whatever modes of genetic variation happen to occur. So whatever types of genetic change can conceivably occur in cell populations are bound to play some role, somewhere, in the evolution of cancers. These will include point mutation on the chromosomes (whether spontaneous or chemically instigated), gross chromosomal changes, loss of cytoplasmic elements, virus infection and its concomitants, and ~~possibly~~ probably other genetic mechanisms of which we now know very little-- e.g. those involved in normal differentiation. Viewed as the problem of cellular evolution, cancer can hardly have a simpler causation than the evolution of other organisms. I agree that ~~it~~ you have implied much of this point of view in your discussion.

Yours sincerely,

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Professor of Medical Genetics